

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (Previously presented) A device for percutaneously exposing an outer layer of a body lumen or body cavity of a patient which is covered by an inner layer of the body lumen or body cavity comprising:

a catheter body having a proximal end, a distal end and a lumen therethrough; and
a dissection tool disposed near the distal end of the catheter body, the dissection tool comprising a radially expansive element circumferentially surrounding the catheter body and a cutting surface extending circumferentially about the radially expansive element, the cutting surface having a continuous cutting edge positioned radially outwardly from the radially expansive element by a preselected distance so that the cutting surface traverses the inner layer to the outer layer without penetrating the outer layer upon expansion of the element.

2. (Previously presented) A device as in claim 1, wherein the body lumen comprises a blood vessel, the inner layer comprises an intimal layer, and the outer layer comprises an adventitial layer, and wherein the catheter body is sized to be positioned within the blood vessel and the cutting surface is positioned a distance radially outwardly from the radially expansive element so that the cutting surface traverses the intimal layer to the adventitial layer without penetrating the adventitial layer upon expansion of the element.

Claim 3-4 (Canceled).

5. (Previously presented) A device as in claim 2, wherein the dissection tool includes a mechanism which rotates the cutting surface.

Claims 6-7 (Canceled).

8. (Previously presented) A device as in claim 2, wherein the dissection tool includes a mechanism which advances the radially expansive element along a portion of the adventitial layer to delaminate the intimal layer from the adventitial layer along a segment of the blood vessel.

9. (Original) A device as in claim 3, wherein the radially expansive element is self-expandable.

10. (Previously presented) A device as in claim 2, wherein the dissection tool further includes an inflatable member surrounded by the radially expansive element so that the element is expandable by action of the inflatable member.

Claims 11-24 (Canceled).

25. (Original) A device as in claim 2, further comprising a stripping tool adapted to be received within the catheter body lumen, said stripping tool comprising a stripping component configured to contact the exposed portion of the adventitial layer and advance along the exposed portion to delaminate the intimal layer from the adventitial layer along a segment of the blood vessel.

26. (Original) A device as in claim 25, wherein the stripping tool further comprises a shaft having a proximal end, a distal end and a threaded surface along at least a portion of its length, wherein the stripping component is mounted on the shaft so that rotation of the shaft advances the stripping component along the shaft.

27. (Original) A device as in claim 26, wherein the stripping component is mounted on the shaft so that rotation of the shaft linearly advances the stripping component along the shaft without rotating the stripping component.

28. (Original) A device as in claim 25, wherein the stripping component comprises a radially expansible ring positionable between the intimal and adventitial layers so that the intimal layer passes through the inside of the ring during advancement.

29. (Original) A device as in claim 28, wherein the catheter further comprises an aspiration lumen and the stripping component further comprises a funnel shaped dissection propagator connected to the ring to guide the delaminated intimal layer into the aspiration lumen.

30. (Original) A device as in claim 29, wherein the catheter further comprises a macerating element within the aspiration lumen and/or dissection propagator to macerate the delaminated intimal layer.

31. (Original) A device as in claim 25, wherein the stripping component comprises at least one radially expandable arm having a blunt-end tip configured to be positionable between the intimal and adventitial layers so that the intimal layer is delaminated as the stripping component is retracted.

32. (Original) A device as in claim 25, wherein the stripping component comprises a radially expansible coil positionable between the intimal and adventitial layers so that the intimal layer passes through the inside of the coil during advancement.

33. (Original) A device as in claim 32, wherein the coil has an oblique angle formed leading edge and the coil is advanceable by rotation.

34. (Original) A device as in claim 25, further comprising a mechanical pump adapted to be received within the catheter body lumen.

35. (Original) A device as in claim 34, further comprising a macerating element located at least partially along the length of said mechanical pump.

36. (Original) A device as in claim 25, wherein the stripping component comprises a rod having an atraumatic distal tip, the rod being angularly extendable from the catheter body and the tip being configured to be positionable between the intimal and adventitial layers.

37. (Original) A device as in claim 36, wherein the rod is rotatable around a longitudinal axis of the catheter body.

38. (Original) A device as in claim 36, wherein the rod is angularly and/or extendably adjustable.

39. (Original) A device as in claim 25, wherein the stripping component comprises an inflatable member.

40. (Original) A device as in claim 39, wherein the stripping component further comprises an angioscope disposed within the inflatable member for visualization of the delamination process.

41. (Original) A device as in claim 39, wherein the stripping tool further comprises an anchoring component configured to contact the vessel wall near the exposed portion of the adventitial layer and remain fixed in place during advancement of the stripping component.

42. (Original) A device as in claim 41, wherein the anchoring component comprises an inflatable member configured to overexpand the blood vessel.

43. (Original) A device as in claim 25, wherein the stripping tool further comprises:

a shaft having a proximal end and a distal end, wherein the stripping component is disposed therebetween;

a proximal occlusion member mounted on the shaft proximal to the stripping component;

a distal occlusion member mounted on the shaft distal to the stripping component;

and

an angioscope and light source disposed between the occlusion members,

wherein the occlusion members are capable of isolating a section of the vessel that is fillable with saline for visualization of the delamination by the angioscope during advancement of the stripping component.

44. (Original) A device as in claim 2, further comprising a stripping tool adapted to be received within the catheter body lumen, said stripping tool comprising a stripping component configured to be inserted between the intimal and adventitial layers and to be rotated around a longitudinal axis of the catheter body to delaminate the intimal layer from the adventitial layer along a segment of the blood vessel.

Claim 45 (Canceled).

46. (Original) A device as in claim 2, further comprising a cutting tool adapted to be received within the catheter body lumen, said cutting tool comprising a ring configured to be advanceable along a cleavage plane between a delaminated intimal layer and the adventitial layer.

47. (Original) A device as in claim 46, wherein the ring comprises a support tube and a cutting wire, wherein the support tube is retractable to expose the cutting wire which is configured to cut through the delaminated intimal layer when tensioned.

48. (Previously presented) A device for percutaneously exposing an outer layer of a body lumen or body cavity of a patient which is covered by an inner layer of the body lumen or body cavity comprising:

a catheter body having a proximal end, a distal end, and a lumen therethrough;
and

a dissection means disposed near the distal end of the catheter body for traversing the inner layer to the outer layer along a circumference of the body lumen or body cavity, without penetrating the outer layer to expose a portion of the outer layer, by expanding a blade which continuously circumscribes the catheter body.

49. (Previously presented) A device as in claim 48, further comprising a stripping means adapted to be received within the catheter body lumen for delaminating the inner layer from the outer layer.

50. (Previously presented) A device as in claim 49, further comprising a cutting means adapted to be received within the catheter body for cutting through and releasing the delaminated inner layer.

Claims 51-53 (Canceled).

54. (Original) A system for percutaneously treating a body lumen or body cavity of a patient comprising:

a dissection catheter having a proximal end, a distal end, and a dissection means disposed near its distal end for dissecting the inner layer to expose a portion of the outer layer; and

a stripping catheter having a proximal end, a distal end, and a stripping means disposed near its distal end to advance along the exposed portion of the outer layer for delaminating the inner layer from the outer layer.

55. (Original) A system as in claim 54, further comprising a cutting catheter having a proximal end, a distal end, and a cutting means disposed near its distal end for cutting through the delaminated inner layer for removal.

56. (Original) A system for percutaneously treating an occlusion in a blood vessel of a patient comprising:

a dissection catheter having a proximal end, a distal end and a dissection tool disposed near the distal end adapted to expose a portion of the adventitial layer; and

a stripping catheter having a proximal end, a distal end and a stripping tool disposed near the distal end adapted to contact the exposed portion of the adventitial layer and advance along the exposed portion to delaminate the intimal layer from the adventitial layer along a segment of the blood vessel.

57. (Original) A system as in claim 56, wherein the dissection tool comprises a radially expansive element configured to expose a portion of the adventitial layer upon contact with the vessel wall in an expanded position.

Claims 58-61 (Canceled).

62. (Original) A system as in claim 56, wherein the stripping tool comprises a stripping component comprising a radially expansible ring positionable between the intimal and adventitial layers so that the intimal layer passes through the inside of the ring during advancement.

63. (Original) A system as in claim 56, wherein the stripping catheter further comprises body lumen and a mechanical pump adapted to be received within the body lumen.

64. (Original) A system as in claim 63, further comprising a macerating element located at least partially along the length of the mechanical pump.

Claims 65-94 (Canceled)

95. (Previously presented) A device as in claim 1, further comprising an aspiration pump disposed within the catheter body.

96. (Previously presented) A device as in claim 95, further comprising a macerator.

97. (Previously presented) A device as in claim 1, wherein the catheter body further includes a guidewire lumen extending between the proximal and distal ends.